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Public Safety Element

of the

LOMPOC GENERAL PLAN

September 1975

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PUBLIC SAFETY ELEMENT

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PUBLIC SAFETY ELEMENT

I AUTHORITY OF THE PUBLIC SAFETY ELEMENT

Authority. Section 65302.1 of the State Government Code requires that a Safety Element be included in all City and County General Plans for the protection of the community from fire and geologic hazards. To be analyzed by this State mandated element are features necessary for disaster protection such as: "evacuation routes, peak load water supply requirements, minimum road widths, clearances around structures and geologic hazard mapping in areas of known geologic hazard".

II SCOPE AND NATURE OF THE SAFETY ELEMENT

The purpose of this safety element is to introduce safety considerations into the planning and implementation processes in order to reduce or eliminate potential injury, loss of life, property damage and economic and social dislocation resulting from hazards which can be identified from both the natural and man made realms of influence.

This element will attempt to identify, define and analyze specific safety considerations which may affect land use planning, project development, emergency services and public services. The specific considerations are:

- A. Fire hazard, fire protection and prevention.
- B. Geologic hazards.
 - 1. Earthquakes
 - 2. Landslides, mudslides
 - 3. Ground subsidence and failures
- C. Natural acts.
 - 1. Flood hazards and dam failure hazards
 - 2. Wind hazards
- D. Man induced occurrences.
 - 1. VAFB air traffic approach
 - 2. Lompoc airport traffic
 - 3. Military - NASA operations
 - 4. Nuclear attack or explosion
 - 5. Chemical or munitions hazards from storage or transit
- E. Air Pollution.
- F. Crime and Prevention.

III GENERAL POLICY STATEMENTS

A. RECOGNITION OF SAFETY HAZARDS. The City recognizes that there is no such thing as a hazard-free environment. Natural features and man's activities will always present some form of potential hazard. The City recognizes, through the adopted General Plan Elements, the known potential hazards which may affect the lives,

property and services of its residents. The City further recognizes its responsibility to react to both the known hazard conditions as well as those unforeseen by the adoption and implementation of the Emergency Service Plans.

B. GOALS IN REDUCING OR MANAGING SAFETY HAZARDS. The goals presented here are guides to policy and standard development as they may affect land use planning and public decision making.

The three goals basic to the safety plan are:

- * to protect life, property, and public well being from fire, geologic, natural and man induced hazard conditions;
- * to reduce or avoid adverse social, economic, and environmental impacts caused by these hazard conditions;
- * to reduce the personal and social risks related to safety hazards.

There are also a number of more specific goals, some of which are presently adopted as part of the various City and County General Plan Elements, which are of great importance to the Public Safety Element.

1. Fire hazards.

- a. Minimize the risks from existing fire hazards through the enforcement of fire safety codes and prevention programs.
- b. Minimize risks from existing fire hazards through upgrading of fire protection and fire fighting facilities and services.
- c. Minimize risks from future potential fire hazards by improving the design review process for increased awareness of fire control design of structures.

2. Seismic and Geologic Hazards.

- a. Minimize the potential risks from an earthquake through incorporating seismic considerations in the planning/development process.
- b. Minimize risks from seismic hazard through disaster preparedness programs.
- c. Provide regulations to insure that structures built on soils with limited ability to support them are designed in such a manner to compensate for support limitations.
- d. To maintain, revise (whenever necessary), and enforce existing standards and criteria to reduce or avoid all levels of seismic or other geologic risk, whether it be unacceptable, tolerated, or avoidable risk.

3. Natural Acts Hazards.

- a. Minimize risks from existing flood hazards by incorporation of flood considerations in the planning/development process.
- b. Minimize risks from flood hazards through disaster preparedness programs.
- c. Minimize risks from flood hazards through enforcement of local, State and Federal regulations for structures, and grading.
- d. Minimize risks from potential wind hazards by upgrading and enforcement of local, state and Federal regulations for structures, mobile homes and grading.

4. Man-Induced Hazards.

- a. Minimize risks from potential Vandenberg Air Force Base operations through continued cooperation and information exchange where hazard reduction policies will continue to develop.
- b. Minimize risks from the Lompoc Airport approach through continued cooperation of City and County agencies in developing and enforcing land use regulations in and around the Lompoc Airport approach zones.
- c. Minimize risks of nuclear and related explosions and mishaps through the disaster preparedness programs.
- d. Minimize risks from chemical and munitions storage and transport through developing storage regulations and updating the Circulation Element to provide adequate truck routes and alternate routes.
- e. Minimize risks from chemical and munitions hazards by developing routes for transport away from established urban development.

5. Air Pollution.

- a. Minimize pollution of the environment by preserving a high level of air quality.

6. Crime Prevention.

- a. Minimize risks of serious crimes against persons and property through increased efforts in law enforcement and development programs.
- b. Minimize risk of serious crimes through the incorporation of crime preventing physical development concepts in the design review process.

7. General Urban Development Hazards.

- a. Minimize risks from potential hazards of all types through a comprehensive public education program.
- b. Recognize the need to provide greater safety for important or critical-use structures (such as hospitals, schools, public assembly facilities, dams, water storage, treatment and utility corridors) through careful site selection, comprehensive site investigation appropriate for the situation (and enforcement of applicable codes and regulations).
- c. Improve interjurisdictional cooperation and communication especially in regard to safety aspects related to dams, reservoirs, state highway and freeway structures, oil wells, regional fault studies, legislative matters, and disaster response or emergency plans.

C. OBJECTIVES IN REDUCING OR MANAGING SAFETY HAZARDS. The goals of the Public Safety Element must be translated into more definitive policy statements and objectives if the Plan is to relate physical, social and economic risks with the power of government available to reduce or eliminate those risks. Further, in order to set priorities in the policy framework, the various levels of risk and the methods and standards for risk mitigation must be outlines. This allows situation analyses and mitigation program formulation to proceed by the uniform application of priorities to the known and potential hazards. The following are recommended for inclusion in the planning implementation process:

1. Fire. The City Shall:

- a. Upgrade fire prevention and protection services through the rehabilitation of the existing fire station.
- b. Study the need for an additional fire station in the north portion of the City as the community continues to grow.

- c. Reconstruct or upgrade areas of inefficient water supply fighting needs.
- d. Continue inspection programs and develop enforcement programs designed to upgrade fire protection capabilities in existing structures.
- e. Improve design review capabilities to provide for increased awareness of fire prevention designs for individual developments.
- f. Develop an emergency circulation plan for fire service as a part of emergency services plans.
- g. Develop a Circulation Element for streets.
- h. Enforce development requirements specified in the fire code, especially when development occurs in a relatively high hazard area such as scrub vegetation or seasonally dry grasses.

2. Geologic Hazards. The City shall:

- a. Encourage the United States Geological Survey and the California Department of Mines and Geology to do field studies to ascertain specific local seismic hazards.
- b. Establish design earthquake criteria for new construction which will reflect local seismic conditions.
- c. Require detailed on-site soils, geology and seismicity studies for all major development projects including, but not limited to, shopping centers, civic buildings, major residential developments, hospitals, police and fire stations, major roads, major utilities.
- d. Identify structurally unsound buildings that would prove hazardous in an earthquake and work with property owners to improve structures.
- e. Incorporate seismic hazard contingencies into a City emergency preparedness plan.

3. Natural Acts and Hazards. The City shall:

- a. Provide adequate drainage facilities for all new development; however, insure that when structures are built within the hundred year flood plain, they are designed to compensate for flood hazard and that drainage facilities provided are to be adequate for the life of the structure.
- b. Cooperate with the County Flood Control District and the Federal government in the development of necessary flood control and hazard information to maintain current flood insurance programs.
- c. Require appropriate construction practices in areas subject to severe erosion from wind including maintenance of optimum ground cover and related soil stabilization procedures until actual construction of facilities or structures commences.
- d. Encourage the State to require permanent, ground mounted, reinforced tie-downs for mobile homes and trailers as part of all trailer parks and individual site locations.

4. Man-Induced Hazards. The City shall:

- a. Test the various aspects of the emergency services plan and disaster preparedness programs and revise where necessary.
- b. Develop with the County, Central Avenue from Highway 246 on the east, to Vandenberg Air Force Base and designate it as a truck route serving fuel and munitions traffic.

5. Air Pollution. The City Shall:

- a. Seek to retain present levels of air quality through integrating air quality impact analysis into the development review process.
- b. Decrease dependence on the automobile by working with other agencies to bring non-polluting public transportation systems to Lompoc.
- c. Develop bicycle and pedestrian system which is safe and efficient enough to replace some short automobile trips.
- d. Work with County and State agencies concerned with air quality to establish an air quality monitoring program in the Lompoc Valley to define existing problems, characteristics of the air shed, and and effective prevention programs.

6. Crime Prevention. The City shall:

- a. Continue to participate in Law Enforcement Education Programs and related programs to increase local law enforcement efficiency and effectiveness.
- b. Discourage crime through the incorporation of "defensible space" concepts into the design review and subdivision review process.
- c. Produce standards and guidelines for commercial and residential development which enable neighborhoods and law enforcement personnel to improve surveillance and reduce physical aspects conducive to crime.

7. General Urban Development Hazards. The City shall:

- a. In areas where hazardous environmental conditions are indicated by the Environmental Resource Management Element data inventory, and safety element, require site-specific studies of that hazardous condition as a part of the development review process. Portions of these studies should be devoted to positive measures which would mitigate risks involved in development.
- b. When specific studies verify a hazardous condition which cannot be acceptably mitigated, the City shall take action to decrease risk to the public. Such actions might include density and use limitations, stricter engineering standards, changes in site plan, etc., as is appropriate.
- c. Where risks from environmental hazards are such that any development poses an unacceptable risk, those lands shall be incorporated into an open space system.

D. RISK DEFINITION AND RISK MITIGATION. In order to evaluate the adequacy of existing codes, regulations, or practices used to reduce or avoid hazards, it is necessary to relate and define risk levels with specific hazards. The types of risks discussed and defined in this report include acceptable, tolerated, avoidable, and unacceptable risk.

Unacceptable Risk: Hazards in this category are those which pose the most serious threat to life or property, where no effective regulatory control exists to require abatement of the hazard or no action has yet been taken. An example of such an unacceptable risk might be an old, earthquake-vulnerable hospital located on an active fault. Alternately, a well-constructed, one-story wood frame residence located in an active fault zone, but not on a fault trace, would be a less severe risk and also categorized as unacceptable, or perhaps tolerated, depending on the dictates of public safety.

In the case of the most severe slope stability problems, a prime example of an unacceptable risk might be an impending landslide about to bury an existing house or other habitable structure for which there is no regulatory control to prohibit its occupancy. It is noted that such hazards are in a large degree avoidable risks which can and should be mitigated in the planning or construction stages of development, either by prohibiting construction within the slide (or fault zone) or eliminating the risk by corrective grading or other feasible measures.

Tolerated and Acceptable Risk: Between the extremes of the risk scale, unacceptable at one end and acceptable at the other, there are all degrees of relative risk. These are less clear-cut situations (such as a suspected slide or potentially active fault) which may or could post a threat to existing features or improvements. A similar situation is the possible hazard of a slide-prone formation which underlies a site. Although these may be equally unacceptable risks, such factors as the probability of occurrence at a site and the importance or value of a structure or land-use result in gradation in the degree of risk unacceptability. Also, further toward the acceptable risk end of the scale are other presently unrecognized hazards, either because of lack of information or capability to detect the hazard. Although there appears to be no consensus for the definition of acceptable risk (for the purposes of categorizing the various hazards in land-use planning), those considered most unacceptable can be identified and mitigated, if possible, or restricted from future use. Those remaining risks, therefore, are placed in the category of tolerated or acceptable risk, with no rigid distinction between the two having been specifically defined.

E. HAZARD REDUCTION STRATEGIES. The methods of mitigating the hazards which are presented and referenced in this Element, are separated into three distinct categories.

The first, most positive approach in hazard management by government and sometimes by private enterprise is hazard abatement. This is the most controversial since it primarily involves the elimination of an existing hazard usually at a substantial cost to the owner or the public. Demolition of an old, earthquake-vulnerable building is an example. It can also have significant negative social impact related to possible relocation requirements necessary to the hazard reduction process. Typical origins of hazard abatement are found in the Building Code, Health and Safety Code, Fire Code and occasionally the zoning ordinance.

The second approach of impact reduction uses measures to minimize the adverse effects of future events or known hazards on development. It can involve reactive efforts such as emergency and contingency plans after a disaster, upgrading of standards to minimize the possible adverse effects of a geologic event, or code enforcement to limit damage potential of structures. Some significant costs to the owner or the public may be involved with impact reduction in that enforcement of various code sections or land use determinations would require additional expenditure on the development in order to comply.

The third approach, and most important at the land use planning level is the strategy of avoidance. With the advanced knowledge of the various types and severity of hazard within a planning area, those land uses most compatible with the risk can be matched, thereby avoiding unacceptable risk areas or limiting them to the least important land uses. Some costs to the public might be realized by this strategy in that lower service costs, lower development costs or revenues (if the "highest and best use" principle of land use planning were operating unrestrained) would possibly be reduced in scope, eliminated or require costly alternatives due to hazard avoidance.

It should be noted however, that the relative costs of hazard avoidance are based solely on something which is not developed at present, and with proper mitigating action, may have greater potential in reducing costs of life, property and social dislocation in the future.

F. SAFETY STANDARDS. Safety standards and criteria are rules established for use as bases for comparison in measuring unacceptable levels of risk. The responsibility for establishing criteria and standards rests with the City. The State has established some standards but enforcement rests with the City.

It is further noted that there exists no single unified set of safety standards due to the vast nature of hazard potentials inherent in the urban field. The City has evolved or adopted series of standards specifications and regulations, which can, however, be outlined here.

The primary ones applicable to the safety element are as follows:

1. The Uniform Building Code
2. Uniform Housing Code
3. Uniform Plumbing Code
4. National Electric Code
5. Hazardous Building Code
6. Uniform Fire Code
7. Zoning Ordinance
8. Subdivision Ordinance
9. State Health and Safety Code.

The Building and Fire Codes contain minimum building standards. Land development standards are in the zoning and subdivision ordinances with grading provisions in the Building Code and some development standards are in the Fire Code. The State Health and Safety Code covers a wide variety of standards necessary to maintain the public health, safety and welfare.

Criteria for evaluating risks as they apply to specifically identified hazards are discussed under each specific safety consideration in the next section of this Element.

IV FIRE PROTECTION

A. 1. STATEMENT OF THE PROBLEM

The City of Lompoc has a responsibility to protect the lives and property of its citizens from fire and other related emergencies by developing and maintaining a fire protection system designed to achieve the following goals:

1. To serve, without prejudice or favoritism, all of the community's citizens by safeguarding collectively and individually, their lives against injurious effects of fire, explosions and other related hazards.
2. To safeguard the general economy and welfare of the community by preventing major conflagrations and the destruction by fire of economically essential industries and businesses.
3. To serve all of the community's citizens and property owners by protecting their individual material wealth and economic well-being against the destructive effects of fire and explosions. All property deserves an equal degree of protection, commensurate with the actual property hazard involved and not with geographical location or monetary value.

Municipalities have historically followed the criteria as set forth by the insurance industry for developing fire protection systems. This criteria is developed to measure a system's single capability - the control of conflagrations. The criteria has served well to protect the insurance industry's interest of avoiding multi-million dollar fire losses. However, it does not address itself to the protection of life nor to the needs of a particular community.

Consequently, municipal fire protection systems are not designed to meet the needs of the entire community and often their cost of maintenance is beyond the community's ability to pay.

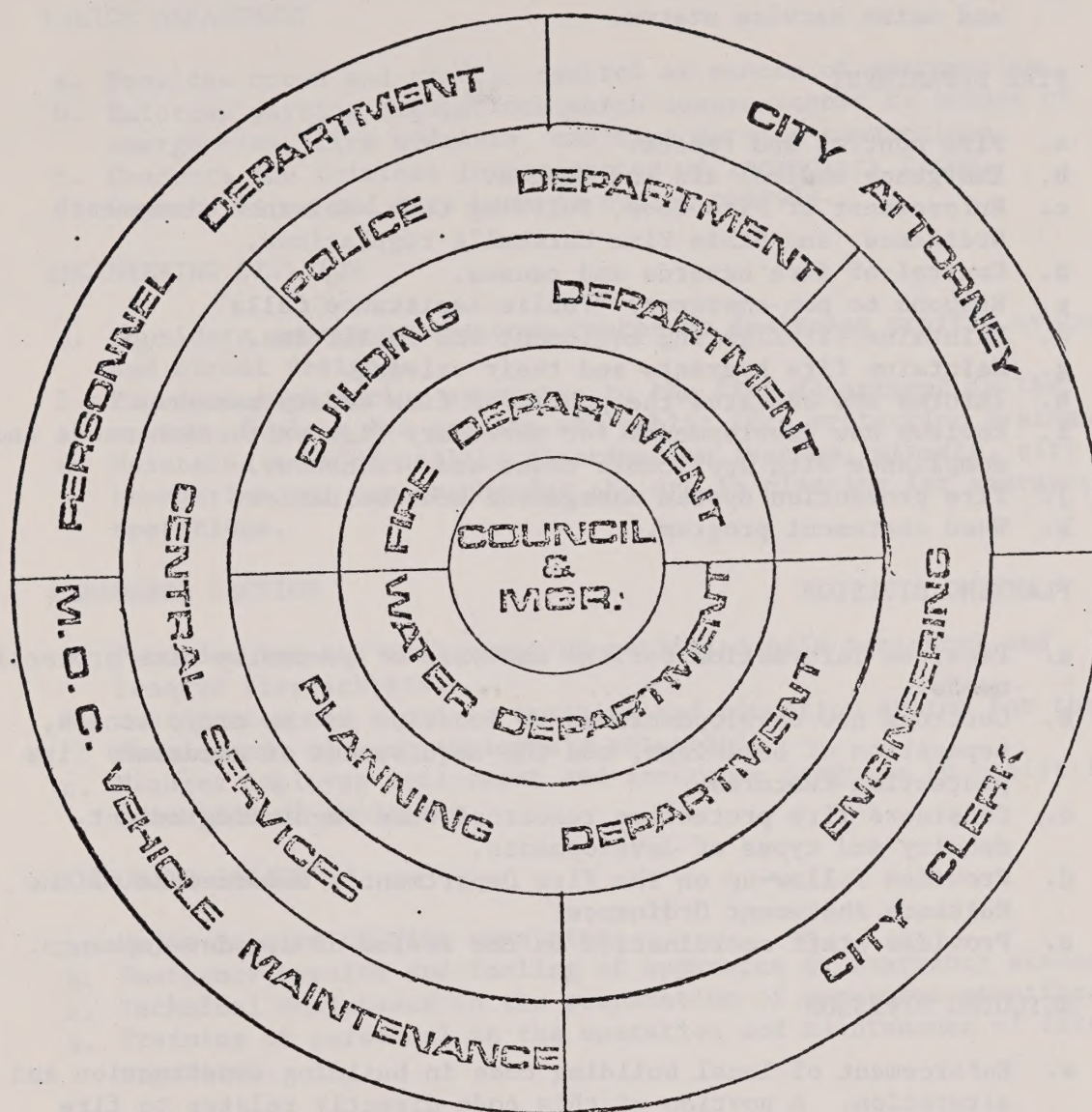
Fire protection system management is a legitimate and basic function of local government. It is a responsibility which should be met by local politicians and administrators, not by the insurance industry. Fire protection costs are met by the tax base of the community as well as the expenses placed upon individual properties through the enforcement of ordinances.

A fire protection system is needed for the City of Lompoc which addresses the needs of the community at a stated level of service and balances the costs between the public and private sectors within the community's ability and desire to pay. This is the purpose of this plan.

B. FIRE PROTECTION PLAN GOALS

- * To identify and adopt a system of adequate fire protection which will serve the specified needs of the City of Lompoc.
- * To provide the optimum level of fire protection for the City of Lompoc.
- * To provide the maximum cost-benefit ratio for fire protection services.
- * To reinforce the goals of the City's General Plan.
- * To define and prioritize Fire Department programs.
- * To serve as a basis for planning and program budgeting for the Fire Department.
- * To clarify fire protection responsibilities of other city departments.
- * To provide a framework for measuring the effectiveness of the fire protection system.
- * To provide a system for revision and updating of the fire protection system.

c. THE FIRE PROTECTION SYSTEM



The fire protection system for the City of Lompoc is much broader than the responsibility of only the Fire Department. Its components are found in the duties and responsibilities of most city departments and divisions.

The fire protection responsibility of each is outlined as follows:

1. WATER DEPARTMENT

- a. Maintains a water supply for combatting fires.
- b. Assures that the valving of distribution mains are maintained so as to provide maximum fire flow.
- c. Performs major repairs and replacement of fire hydrants.
- d. Responds a standby crew to greater alarm fires to assist with water supply problems.

- e. Maintains records necessary to City's fire defense grading.
- f. Inspects the connection of private fire protection systems to the water system and assures an adequate supply of water.
- g. Provides current information to the Fire Department on hydrants and mains service status.

2. FIRE DEPARTMENT

- a. Fire control and rescue.
- b. Emergency medical aid and rescue.
- c. Enforcement of Fire Code, Building Code, Nuisance Abatement Ordinance, and State Fire Marshal's regulations.
- d. Control of fire hazards and causes.
- e. Respond to non-emergency "Public Assistance Calls".
- f. Maintains firefighting equipment and facilities.
- g. Maintains fire hydrants and their valving.
- h. Informs and educates the public of fire safety measures.
- i. Reviews new developments for necessary fire protection needs and compliance with applicable codes and ordinances.
- j. Fire protection system management and evaluation.
- k. Weed abatement program.

3. PLANNING DIVISION

- a. Provides information for the analysis of community fire protection needs.
- b. Controls new developments as to location in the city, access, separation of buildings, and the requirement of necessary fire protection features.
- c. Considers fire protection resources when regulating height, density and types of developments.
- d. Provides follow-up on the Fire Department's enforcement of the Nuisance Abatement Ordinance.
- e. Provides staff coordination on the review of new developments.

4. BUILDING DIVISION

- a. Enforcement of local building code in building construction and alteration. A portion of this code directly relates to fire protection systems, fire resistance, life safety, and control of hazards of building mechanical systems.
- b. Occupancy classification and permits which control the changing use of buildings to assure compliance with minimum fire and life safety requirements.
- c. Assignment of street numbers and approval of unit identification systems for ready location during emergencies.
- d. Rehabilitation and dangerous building program which corrects structural deficiencies (including fire protection problems) in older structures.

5. POLICE DEPARTMENT

- a. Provides crowd and traffic control at scenes of emergencies.
- b. Enforces parking regulations which assure access to scenes of emergencies, fire hydrants, and fire service connections.
- c. Conducts the criminal investigation of incendiary fires.
- d. Reports fires and fire hazards during patrols.

6. ENGINEERING DIVISION

- a. Considers emergency response routes in designing traffic systems and street designs.
- b. Provides engineering expertise to the fire department in the review of plans for private and public fire protection systems.
- c. Maintains maps of utility distribution systems, streets, city boundaries and topography for the use in planning for emergency operations.

7. PERSONNEL SECTION

- a. Provides for the employment of qualified paid personnel and reserve firefighters.
- b. Coordinates the employee training and education system for the development of each employee's potential.
- c. Manages employee retirement and insurance programs to assist in retention of employees.

8. CORPORATE GARAGE

- a. Major repairs of fire apparatus.
- b. Emergency repairs and fueling of apparatus at emergency scenes.
- c. Technical assistance in the preparation of apparatus specifications.
- d. Training of personnel in the operation and maintenance of fire apparatus.

D. POLICY OF FIRE PROTECTION

It shall be the policy of the City of Lompoc to provide a level of fire protection services which will protect the lives and property of its citizens from unacceptable losses due to fire.

Those properties or processes which constitute an unusual potential demand for services shall be required to provide sufficient private fire protection equipment to bring the potential demand for services within the capabilities of the public fire service.

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Consideration of this policy must include an analysis of the economic, moral, legal and political impacts it will have upon the community. Aspects which must be considered include:

1. ECONOMIC

- a. Additional direct costs to property owners and future developers.
- b. Protection from losses in the local economy of wages, taxes and revenues due to major fires.
- c. Longer productive life of buildings with high fire resistance.
- d. Higher assessed value of buildings with high fire resistance.
- e. Reduced individual fire insurance costs and the feasibility of future insurance class reductions.
- f. Attraction of new commercial and industrial developments, to which the quality of fire protection is a consideration.
- g. Limiting public fire service costs by requiring a higher degree of fire resistance and fire protection systems in private developments.
- h. Cost effective considerations of Fire Department expenditures.

2. MORAL

- a. The city has an obligation to insure that processes and businesses are conducted so as to not unduly endanger lives and property.
- b. Government founded by the people for mutual advantage and protection carries an innate obligation to ensure that adequate levels of advantage and protection exist.
- c. Mutual protection includes an obligation to prevent the destruction of another's property by the negligence or overt act of his neighbor.
- d. The deterioration and blight of property has many disadvantages to the community, including the increase in fire service demands and the potential of conflagrations. An obligation exists to require the maintenance of property to the mutual advantage.

3. LEGAL

- a. The Uniform Building Code and the State Fire Marshal's rules and regulations dictate a minimum level of fire protection in buildings.

- b. The Uniform Fire Code dictates a minimum level of fire protection in the conducting of processes and the maintenance of fire protection features within buildings.
- c. Codes and ordinances relating to development, building construction, land use, open space, and traffic impact directly upon the fire protection system and due consideration should be given in their development.

4. POLITICAL

- a. The impact of effective or ineffective fire services.
- b. The effect fire protection has upon the economic stability of the community.
- c. The impact upon the image of city government of public contact programs within the fire protection system.

E. PLAN IMPLEMENTATION

1. Acceptable risk - following a thorough analysis the existing fire protection system and the community's financial resources, a policy decision must be made as to what level of loss due to fire is acceptable to the community. This acceptable risk should address measurable factors such as:

- a. Response time of fire apparatus.
- b. Fire flow capability.
 - . Water system capabilities
 - . Fire Department manpower requirement.
 - . Number and capacity of fire apparatus.
- c. Structural Conditions.
 - . Adequacy of level of code enforcement.
 - . Retroactive requirements for existing buildings.
 - . Requirements for new buildings.

2.. Necessary studies -

- a. Fire defense capabilities.
- b. Response time and distances.
- c. Fire station replacement.
- d. Fire loss potential.
- e. Water system capabilities.

3.. Implementation -

- a. January 1976 - completion of Staff studies and recommendations.
- b. March 1976 - Planning Commission study and approval.
- c. April 1976 - City Council study and approval.

F. FIRE HAZARD DETERMINATIONS

1. Conditions of Wildland Fires.

The Santa Barbara County Comprehensive Plan, Conservation Element describes the conditions and potentials of wildland fires and fire hazard areas around Lompoc. It should be noted that while no wildland fire hazards exist within the City, the perimeter of the planning area on the north and south sides are within the extreme fire hazard area designation. The proximity of these areas to residential development presents a potential hazard when fire conditions are right. The County General Plan discusses various means of control and abatement which are applicable to the immediate area and are a part of the County's control system. The City, County and Vandenberg AFB also have a mutual assistance agreement in the event of major fires in the Valley.

2. Conditions of Urban Fires

Approximately 60% of the urban area of Lompoc is single family dwellings of recent age while another 20% is multiple family dwellings. Due to the spacing, age, type of construction and the ability of the fire department to respond rapidly to individual events, the potential for fires in a residential area to involve more than one structure is low. There are, however, some areas of the City in which spacing of older homes and their construction materials present a moderate potential for larger fires involving more than one structure. These areas are generally indicated on the fire hazard map and are located in the south central portion of the City. The south central portion of the city is generally defined as the area between College and Cypress Avenues, "A" to "O" Street. Further study of the structural adequacy of these buildings to meet fire safety standards should be made.

Approximately 20% of the City is in commercial and industrial use. No definitive surveys have been accomplished to assess the relative risk levels of these areas, but some initial review of the nine block area of downtown Lompoc has been achieved. The area was reviewed as to overall fire code compliance and as to the fire defense capabilities of the City. It should be noted that the majority of the structures are suspected of being either below minimum fire safety codes or beyond the fire defense capabilities of the City at this time.

Further studies should be initiated in the following areas.

- a. Mapping of potential conflagration areas.
- b. Evaluations of the light manufacturing districts along Laurel and Chestnut Avenues.
- c. Service and equipment needs for improved fire defense capability.

G. STRUCTURAL SAFETY MEASURES

On existing structures, the best defense against loss from fire or limiting losses is the systematic survey and upgrading of structures to meet the standards of the fire safety codes. It is recommended that the program of fire department inspections be continued and that a code enforcement program be developed by the City.

While code enforcement will assist in fire control and prevention, there are presently unmet needs which should be further defined as they relate to the Fire Department's physical plant, location and equipment.

For future developments, the City has adopted the most recent building and fire codes. A newly revised Subdivision Ordinance also contributes to the mitigation of potential fire hazards by setting minimum subdivision improvement and design criteria. For commercial and industrial developments, the design review process should include considerations for fire safety and control as it affects overall site and structural design.

H. PEAK LOAD WATER SUPPLY

1. Peaking Factors

The City water department maintains records of annual and daily water production amounts. The department does not meter directly the peak hourly rates of consumption but does compute peak hourly consumption rates by combining quantity pumped per hour with change in storage volume. The following table shows the peaking factors in Lompoc for the last three years.

	<u>Ave. Day</u> <u>GPM</u>	<u>GPM</u>	<u>Maximum Day</u> <u>Ratio to Ave.</u>	<u>Peak Hour</u> <u>GPM</u>	<u>Ratio to Ave.</u>
1970	2210	4230	1.91	6830	3.09
1971	2260	3710	1.64	6550	2.90
1972	2310	3630	1.57	5730	2.48

These ratios show a gradual decline in maximum day and peak hour factors. These values are also somewhat lower than is generally experienced in Southern California. As a conservative approach to the network analysis it was assumed that these values may reverse this trend and approach the higher values found elsewhere. Consequently ratios of 2.0 and 3.5 were used. Applying these factors to annual water demand for 1990, yields a future maximum day rate of 7,890 GPM and a peak hourly rate of 13,800 GPM.

2. FIRE FLOWS

Required fire flow amounts vary in different portions of the City. In 1964 the fire rating bureau established the following critical fire flow:

Shopping center and principal business district, "H" north of College	3,500 GPM
Two story hotel, "H" and Central	3,000 GPM
Typical residential	1,000 GPM
Light industrial, Laurel & "V"	3,000 GPM
School, Ocean & N	2,500 GPM

These values were discussed with the American Insurance Association. The Association has no further information but believe these values are still reasonable. They are comparative to fire flow requirements in similar areas of other cities. The water distribution system should be able to supply these quantities, individually, while at the same time furnishing domestic water during a maximum day. The concurrent domestic demand at ultimate development is 7,890 GPM.

3. STORAGE REQUIREMENTS

Storage is necessary to provide for differences between supply rate and peak hourly consumption rate, to store the maximum fire flow, and to provide for outages in source of supply. The maximum fire flow is 3,500 GPM for a duration of 10 hours. This amounts to a water requirement of 2.1 million gallons to be supplied from storage or from pumping units with alternate sources of power. Diurnal variation, the total difference between pumping rate and actual demand rate, is approximately 25 percent of the day's consumption. Applying this to the maximum day consumption of 11.4 MGD yields a storage amount of 2.8 million gallons. Future storage for fire and diurnal variation is 4.9 million gallons. Criteria for storage for outages to source of supply are variable. For systems supplied from an importation water line storage should provide for an outage of several days. Lompoc is supplied from wells and emergency storage should be based on possible well outage. Should the treatment plant be down, it can be by-passed and storage is not necessary for that condition. Storage should provide for loss of power to the booster pumps or wells. Power outages usually do not last more than a few hours. However, it is generally considered good waterworks practice to provide for a maximum outage of 24 hours. For the future maximum day this is a storage amount of 11.4 million gallons.

In computing total required storage it is not necessary to add emergency storage volume to the fire and diurnal storage, but to use the larger requirement. Existing storage is 5.0

million gallons. Subtracting this from 11.4 million gallons total storage leaves 6.4 million gallons of additional storage to be constructed. Based on a review of existing operating problems and system pressures it is believed the future storage should be constructed in the southeast and southwest corners of the City, of 3.0 million gallon capacity each. Two reservoirs are a little more in first cost than a single larger reservoir, but staged construction can be done, and hydraulically the system will function much better with 2 new reservoirs.

4. SUPPLY

Analysis of the existing well system was not included in most recent reports. However, it should be noted that well capacity at all times should be adequate to produce the total requirement of the maximum day with the largest well out of service. This same criterion will apply to the booster pumps. Prior to reaching the ultimate development and its water requirements, additional booster pump capacity may be needed. Present pump capacity is 7500 GPM with the largest pump not operating, which the ultimate maximum day is computed to be 7,890 GPM.

5. DISTRIBUTION SYSTEM

Using the ultimate domestic demands discussed previously and the tabulated fire flows, various network analysis were made. The existing system was checked using future consumption within the portion of the City. The ultimate system was analyzed using peak hourly consumption, and also for fire flow occurring simultaneously with the average rate of a maximum day. Existing pipe lines 6 inches and smaller were not included, except where necessary to close loops. The recommended future water lines are indicated on the map included in the appendix. Exact sequence of construction is difficult to determine precisely, being partly a matter of engineering calculation, and judgment, and also financial capability. The recommended future water lines and storage have been segregated into priority groupings, as shown on the map. From these groupings it is believed the City can select a precise timetable for the various improvements, based on actual growth rate and financial capability.

It should be noted that the locations indicated on the map are not rigidly set. Some adjustments to locations, made with engineering judgment, can be done without adversely affecting system hydraulics. A potential water line directly from the proposed reservoir at the southeasterly corner of the City to University Heights may be necessary. The new reservoir and water lines in that area should correct this deficiency. However, if the actual water use trends in this localized area exceed those determined in the study, and reservoir operating level drops significantly during maximum demand periods, residual pressures in University Heights could remain too low. Maximum static pressure in this area is approximately 40 p.s.i.

V GEOLOGIC HAZARD DETERMINATION

The identification of seismic and other geologic hazards are presented in great detail in the Santa Barbara County Comprehensive Plan, Seismic Safety Element. The element identifies specific seismic and geologic conditions relative to Lompoc and the surrounding valley area.

The Lompoc Environmental Resource Management Element (ERME) provides a general overview and composite map of seismic and geologic hazards. Specific site and structural conditions found in these elements are not reproduced here but are referenced for the sake of brevity.

Identification of structures of potential unacceptable risk.

A. BUILDINGS

1. Residential. Most all of the structures in Lompoc can be classified as acceptable or tolerable risks based upon Lompoc's mean structural age and building occupancy profile. Over 60% of the urban land area is single family residential development of 20 years or less age. Multiple family residential development constitutes another 20% of the land area and is of similar age. Building considerations under applicable codes would generally imply these were constructed under modern construction techniques with appropriate footings, bracings and strengths.

There are however, two areas of concern for residential structures in which the mean age suggests a high concentration of housing constructed prior to building code consideration of seismic events and geologic conditions. These areas, located in the south central portion of the city should receive a general survey to determine more fully the adequacy of the homes to resist a geologic event.

2. Commercial and Industrial. The commercial and industrial areas of the City comprise nearly 20% of the urban land area. A preliminary survey of the structural adequacy and fire safety aspects in a nine block area of downtown Lompoc has been completed. The results indicate a number of buildings which are suspect in terms of earthquake safety. A complete structural survey by an engineer will be necessary before final determinations can be made on methods of hazard mitigation.

Newer construction of commercial buildings along the commercial corridors indicate the general ability to withstand average hypothetical events. It should be noted however that as the size and weight of structures increase, their susceptibility to damage from the accentuated ground shaking which results on the alluvial soils of the valley will have to be mitigated by more costly construction methods. Earthquake resistant foundations and other new technological advances may be necessary in order to adequately insure against substantial property losses from ground shaking and subsidence. There are also areas of industrial development which should receive structural surveys to determine their adequacy under seismic and geologic action.

The areas which potentially pose a hazard and/or should receive more detailed surveys are indicated on the comprehensive hazard map in the ERME.

B. WATER STORAGE, TREATMENT FACILITIES AND SUPPLY LINES.

Lompoc's water supply, as mentioned earlier, is from wells located in the surrounding hills and valley. These wells are subject to potential disruption by seismic and geologic displacement but as such, do not constitute a serious threat or an unacceptable risk to the community. The Emergency Plan does contain mitigation provisions and rapid repairs can generally be accommodated in all but the most severe potential geologic event without undue discomfort. The most severe event would probably require redrilling of wells and replacement of damaged equipment.

There are two specific water storage structures which require further study in order to identify relative risk levels to the community. One water tank is located on the southern hillside above a residential area of Lompoc which has been identified as being potentially unstable, leading to possible landslide in the event of a quake. The structure itself is of recent design that will resist damage from moderate magnitude shaking but a severe quake might lead to slope failure giving way to the weight of 2.5 million gallon capacity structure. A more thorough investigation than that provided in the County General Plan should be initiated. The second structure lies 1.5 miles South of Lompoc in Miguelito Canyon and is of similar design. Moderate to severe shaking could affect this structure as noted for the above water storage structure.

The water treatment facility which insures local water quality has been designed and engineered to resist some earthquake shock. In the event of major quake damage, contingency plans have been developed for water quality monitoring and the Water Department maintains a "Water Quality Emergency Notification Plan".

The water supply system, water production and treatment design offers a variety of alternate methods of operation that can cope with potential hazards. Those portions of the water system which are yet to be evaluated as to seismic and geologic risk should be reviewed.

C. NATURAL GAS AND ELECTRIC SERVICE AND TRANSMISSION LINES.

There are no specific structures or system services which can be termed unacceptable risks. Both systems are so designed that in the event of emergency, part or all of the systems can be shut down. It should be noted that the prolonged inability to transmit natural gas or electricity would be hazardous to the community. Health and Safety hazards could result from an inability to provide heat and refrigeration. Most public facilities are somewhat self sustaining in that they can provide alternate electrical power from gasoline generators and could be supplied with butane or propane. Contingency plans for public utilities are a part of the Emergency Services Plan of the City.

D. MITIGATING MEASURES.

Zoning and Building Codes. The Uniform Building Codes provide for specific engineering construction design and practices for areas subject to potential seismic and geologic activity. Further, soils and geologic investigations and design considerations must be made, under Chapter 70 of the UBC, prior to issuance of any building permit when, in the opinion of the local agency, such investigations are warranted. It is through the UBC that we deal with structural hazard conditions by spelling out various criteria which must be met as well as providing adequate steps for hazard mitigation. In the final instance, those projects which cannot meet the standards and specifications for reasonable security in health, safety and general welfare, cannot be constructed.

The zoning ordinance of the City regulates the type of uses and relationship of uses on the land. Until recently, little real emphasis was placed upon environmental considerations in land use planning and zoning. The City of Lompoc utilizes an open space zone when data suggests an unacceptable level of risk may be present in an area making it relatively uninhabitable. There is potential however, to create new zone designations or overlay zones which more specifically regulate development according to the type of geologic hazard identified. With this concept it could be feasible to maintain an orderly development pattern without creating unacceptable risks when suitable alternatives exist.

E. EXISTING PUBLIC FACILITIES.

Some existing public facilities may require reconditioning to limit the potential for severe damage during seismic or other geologic events. While precise knowledge of the structural suitability may not be known on all public structures, a program of evaluation should be undertaken and remedial steps taken to improve identified deficiencies. On a priority basis, the following structures should be reviewed:

1. Those identified in the Emergency Services Plan as emergency operations centers and temporary seats of government.
2. Water storage structures, particularly those directly above urbanized area.
3. Other public buildings serving as shelters or continuing functions such as fire stations, water and sewage treatment facilities, etc.
4. All other "non-essential" public buildings capable of temporarily housing population.

VI NATURAL ACTS, FLOOD AND WIND HAZARD

A. FLOOD HAZARD DETERMINATIONS.

As recently as 1969 there has been dramatic evidence of the flood hazard which exists in Lompoc. The following are excerpts from the publication "Flood Plain Information Santa Ynez River (Lompoc to Pacific Ocean)" prepared by the Corps of Engineers in January of 1970 which describe flooding potentials generally as well as relate to the 1969 flood.

1. Summary of Flood Situation. The 13.5 mile reach of the Santa Ynez River under study in Santa Barbara County, is northwest of the City of Santa Barbara and is in an area, locally known as the Lompoc Valley, which extends from about 3.5 miles upstream from the City of Lompoc to the Pacific Ocean.

The principal development on the Santa Ynez River flood plain is agriculture. The future economy of the Lompoc Valley will be based upon agriculture, tourism, the influx of retirees, and Vandenberg Air Force Base. Parts of Lompoc Valley have been inundated by floods of the past and are within reach of the potentially greater floods of the future.

2. The Largest Flood of Record on the Santa Ynez River occurred on January 9, 1907, and had an estimated peak flow of 120,000 cubic feet per second measured at Lompoc (near the present State Route 246 bridge). The damage occurred primarily to agricultural, residential, highway and railroad properties and was estimated at \$38,500 (1907 dollars) for the entire Santa Ynez River Basin. Two lives were lost during this flood.

3. Standard Project Floods on the Santa Ynez River are floods that can be expected from the most severe combination of meteorological and hydrological conditions reasonably characteristic of the area. They are shown on the flood plain map. See also Tables 1, 2 and 3. An analysis of these conditions indicates that the Standard Project Flood would have a peak discharge of 138,000 cubic feet per second at the stream-gauging station at the State Route 246 bridge. The analysis also indicates that the Standard Project Flood would create depths of flow ranging from 1/2 foot to 2 feet above the intermediate Regional Flood on the flood plain of the Santa Ynez River in the study reach.
4. Flood Damage that would result from recurrence of major known floods would be substantial. Past flood records indicate that extensive erosion would occur, especially to the steep-banked lands adjacent to the river. Extensive damage would be caused by the Intermediate Regional and Standard Project Floods because of their wider extent, greater depth, and higher velocities. Future flood damage would also be greater because of increasing development in the area.
5. The Main Flood Season for the Santa Ynez River Valley area is in the winter from November through April. The storms occurring during these winter months last for several days, are widespread, and produce the greater floods. However, floods caused by intense local thunderstorms may occur at any time of the year.
6. The Velocity of Water in the reach below mile 8.5 (the Lompoc Sewage Treatment Plant) will be as much as 14 feet per second in the channel and as much as 3 feet per second in the flood plain for the Standard Project Flood and as much as 11 feet per second in the channel and 3 feet per second in the flood plain for the Intermediate Regional Flood. These values are averages across the areas concerned and local obstructions such as bridges and elevated roadways would induce much larger velocities. Average velocities for the area upstream of mile 8.5 will be slightly higher than mentioned above due to the more constricted nature of the stream in this reach. Velocities greater than 3 feet per second, combined with depths of 3 feet or greater are generally considered hazardous.
7. The Duration of Flooding is dependent upon the storm type. The January 1969 flood peaked about one day after intense rainfall began and the total duration of flooding was about two days, although some low areas remained inundated for days afterward, and high but nonflooding flows were recorded for weeks afterward. The Standard Project Flood on the Santa Ynez River in the study reach would attain peak flow about two days after intense rainfall begins and the total duration of flooding is estimated at four days.
8. Flood Damage Prevention Measures. There are at present no authorized Federal Flood control projects or related measures on the Santa Ynez River in the study reach. Three upstream reservoirs, Lake Cachuma, Gibraltar Reservoir and Jameson Lake are water supply reservoirs and provide very little flood control during major floods. There are small local bank-protection facilities in the study reach but these have little effect upon flood control during a major flood. At present, the only control on occupancy of the flood plain is through subdivision regulation. (Note: Zoning and Federal Flood insurance programs have been instituted since the date of this publication).

9. Hazardous Conditions would occur during large floods as a result of the rapidly rising streams, high velocities, and deep flows. The floods of 1969 are excellent examples of these conditions. During these floods three bridges were completely or partly destroyed, many vehicles washed downstream, and vertical banks caved in, endangering nearby structures and persons. These hazards would be compounded as more use is made of the flood plain and as higher flows occur.
10. Future Flood Heights on the Santa Ynez River that would be reached by the Intermediate Regional Flood and the Standard Project Flood have been compared with the height of the January 1969 flood and that comparison, together with the respective flow rates is shown on table 1. The comparison of this known recent flood of medium magnitude and the future floods of greater magnitude on the Santa Ynez River was made at a point near the City of Lompoc.

Table 1

RELATIVE FLOOD HEIGHTS

<u>Flood</u>	<u>Location</u>	<u>Mile above mouth</u>	<u>Estimated peak discharge cfs</u>	<u>Above January 1969 Flood feet</u>
January 1969	Lompoc	7.35	100,000	0
Intermediate Regional	Lompoc	7.35	116,000 ¹	1
Standard Project	Lompoc	7.35	136,000 ¹	2

(1) - Effect of Cachuma Dam was considered in determining peak discharges.

11. Developments in the Flood Plain. The primary economic activity on the flood plain in the study reach of the Santa Ynez River and on adjacent areas is farming, which involves raising flower seed, grains, vegetables and livestock forage. A part of Vandenberg Air Force Base, including the NASA Facility and the City Wastewater Treatment Plant are in the flood plain. Commercial activities and building concentrations have generally been located away from the flood plain of the Santa Ynez River; however, populated areas are expanding toward the flood plain and, in some cases, are adjacent to it.
12. Future Floods. This section of the report discusses the Intermediate Regional Flood and the Standard Project Flood on the Santa Ynez River in the Lompoc Valley, and some of the hazards of these great floods. Floods the size of the Intermediate Regional Flood represent reasonable upper limits of expected flooding.

Floods of appreciable magnitude such as those that occurred during 1907, 1914 and 1969 have been experienced in the past on the Santa Ynez River and its tributaries. The probability exists that floods of the magnitude of the Intermediate Regional Flood and of the Standard Project Flood will occur on this river.

13. Determination of Intermediate Regional Flood. The intermediate Regional Flood is defined as a flood having an average frequency of occurrence in the order of once in the 100 years at a designated location, although the flood may occur in any year. This probability of occurrence is based on a regional flood frequency analysis of peak flows.

The peak discharges of the Intermediate Regional Flood at several points on the Santa Ynez River are given in table 2. Channel storage and the distribution of rainfall account for the decreasing magnitude of the peak discharges.

Table 2

INTERMEDIATE REGIONAL FLOOD

PEAK DISCHARGES

<u>Stream</u>	<u>Location</u>	<u>River mile</u>	<u>Drainage area sq. mile</u>	<u>Discharge cfs</u>
Santa Ynez River	Downstream limit of study	0.00	900	113,000
	Floradale Avenue	7.35	832	116,000
	State Route 246	12.82	790	118,000
	Upstream limit of study	13.51	789	118,000

14. Determination of Standard Project Flood. Only in rare instances has any specific stream experienced the largest flood that is likely to occur. Severe as the maximum known flood may have been on any given stream, it is a commonly accepted fact that, in practically all cases, sooner or later a larger flood can and probably will occur.

The Standard Project Flood is defined as the largest flood that can be expected from the most severe combination of meteorological and hydrological conditions considered reasonably characteristic of the geographical region involved.

The peak discharges of the Standard Project Flood at several points on the Santa Ynez River are given in table 3. Channel storage, and the distribution of rainfall account for the lesser magnitude of the peak discharges at the downstream points.

Table 3
STANDARD PROJECT FLOOD

PEAK DISCHARGES

<u>Stream</u>	<u>Location</u>	<u>River mile</u>	<u>Drainage area sq. mile</u>	<u>Discharge cfs</u>
Santa Ynez River	Downstream limit of study	0.00	900	132,000
	Floradale Avenue	7.35	832	136,000
	State Route 246	12.82	790	138,000
	Upstream limit of study	13.51	789	138,000

15. Frequency. It is not practical to assign a frequency to the Standard Project Flood. The occurrence of such a flood would be a rare event; however, it could occur in any year.
16. Possible Larger Floods. Floods larger than the Standard Project Flood, such as the Probable Maximum Flood (which is commonly 160% to 250% of the Standard Project Flood), are possible; however, this type of flood is rare indeed. The consideration of a flood of this magnitude is of greater importance in some problems, such as designing a dam, than in others, but its importance should not be overlooked in the study of any problem.
17. Hazards of Great Floods. The amount and extent of damage caused by any flood depend in general upon how much area is flooded, the depth of flooding, the velocity of flow, the rate of rise and the duration of flooding. A review of the history of flooding in the Lompoc Valley indicates that severe erosion and bank cutting are to be expected during floods of great magnitude. Certain areas, such as the area around Floradale Avenue and the Santa Ynez River and the area around Artesia Avenue and the Santa Ynez River, appear to be extremely sensitive to erosion from high floodflows and are mentioned in many of the past flood histories. Floods of the magnitude of the Intermediate Regional Flood and greater can be expected to uproot trees and other growth which, if permitted to obstruct the flow under bridges, could create a distinct hazard to the bridges and possibly cause their complete failure. Structures near the main channel where velocities are high could be completely demolished.
18. Areas Flooded and Heights of Flooding. The areas along the Santa Ynez River that would be flooded by the Standard Project Flood and the Intermediate Regional Flood are shown on the Flood Plain Map in the ERME. The Standard Project Flood profile for the river is about 0.5 to 2.0 feet higher than that of the Intermediate Regional Flood. The smaller difference in water depth would occur in certain reaches of the river because of the extensive width of the flood plain.

19. Structural Hazard Survey. To date, no specific survey of structures which may be affected by intermediate or standard project floods has been accomplished. More general areas have been indicated through the Federal Flood insurance program and are shown on the Flood Plain Map. As new information becomes available and more detailed surveys completed a map of the structures which would be affected by the Standard Project Flood will be developed.
20. Mitigation Measures. The City of Lompoc has instituted a number of measures which will reduce or eliminate flood hazards for structures within the City. The City presently participates in the National Flood Insurance Program and will insure that the requirements and standards specified in the program will be met.

Those land areas classified as potential unacceptable risk which are not presently developed have been placed in an open space zone. Those land areas between the river and the City limits which are within the flood plain are identified on the Land Use Plan as open space and the County Land Use Plan reflects the same.

There are areas which are zoned for development within the flood plain. These locations are capable of being developed when grading for foundations can be obtained above the Standard Project Flood level. Each project proposal within the flood plain is reviewed by the Santa Barbara County Control Agency to insure the acceptability of grading and drainage plans.

The City also participates in various activities with the County Flood Control District to improve drainage and flood control facilities throughout the Lompoc Area.

B. WIND HAZARD DETERMINATIONS.

Lompoc is situated approximately 10 miles inland from the coast, in the Santa Ynez River bottom, surrounded on three sides by hills. This location is part of the westernmost prominent land mass of Southern California. As such, coastal wind and storm patterns frequently moving southward, turn in their direction along this area to move inland. While daily wind occurrences range from 10 to 20 knots over approximately 25% of the time, storm related winds have been recorded over 80 knots in severe storms.

There are two major directions from which storms generally appear, the northwest which is most common, and the south to southeast, which is far less frequent. From assembled climatological data, it can be generally said that northern originated storms carry larger volumes of water, but move with less wind force than those which originate from the south. Average wind velocity differences are approximately 5 knots stronger in southern origin storms than in the north, with a difference in the extremes being 15 knots.

From the standpoint of risk to structures from wind hazards, there seems to be little danger of high wind hazards of the magnitude found in the southern United States as a result of hurricanes. Hurricane winds have been recorded in the western Pacific areas but are generally confined to the southern reaches of Baja California. What structural hazards do exist are usually found to relate to fallen trees, power lines and poles,

unsecured structures such as old signs and billboards, and mobile homes and trailers lacking ground mounted tie-downs. It is generally assumed that damage would begin to be recorded when winds exceed 40 knots with moderate damage produced above 70 knots. Severe damage could be sustained to older structures and facilities with wind forces exceeding 100 knots, but such an occurrence is highly infrequent and does not seem to justify extensive mitigation measures.

The Uniform Building Code is generally sufficient to regulate against wind damage which would create a significant hazard to the public. All buildings and structures including signs as structures, are regulated and designed for wind loading factors. The City also responds to fallen trees or trees highly suspected of falling from wind forces. Of some greater concern is the need to review practices in mobile home and trailer parks. At present, the State does not require tie-downs for all mobile homes and trailers in parks, and the State is the only agency regulating the parks. From studies done by various national organizations and testing agencies on mobile homes, winds of moderate force can shift unsecured mobile homes on their standards, while as wind forces increase above 60 knots, they can be shoved off their standards. It was proven under test conditions and in actual disasters that mobile homes and trailers which were tied down with ground mounted apparatus suffered far less structural damage even under severe wind conditions than those not tied down.

The City has over 600 occupied trailer spaces and none are required to have tie-down apparatus as part of the trailer pad. The City cannot require such installations due to State regulation of parks, pre-empting local controls. It is therefore recommended that the State require tie-downs as part of the installation of new parks in areas where wind hazards may exist.

VII CRIME PREVENTION

A. DEFINITION OF SERIOUS CRIME LEVELS.

Following are the 1973 and 1974 crime rates as recorded by the California Department of Justice in seven major crime categories:

Murder
Forcible Rape
Robbery
Assault
Burglary
Grand Theft
Auto Theft

The crime rate for Lompoc was compared with other cities of equivalent size selected at random from the "Crime in California" report. Statistics are for six-month periods, January - June:

	<u>1973</u>	<u>1974</u>
Lompoc	216	202
Santa Maria	475	538
Santa Paula	277	233
Gilroy	206	247
San Luis Obispo	326	338
Average	300	311.6

Lompoc's major crime rate is well below the average of the five selected cities. Lompoc enjoys a relatively low crime rate because of its rural environment.

B. LOCATION OF CRIMES AND CRIMES RELATED TO PHYSICAL URBAN ENVIRONMENT

There are no areas in Lompoc that experience a predictable rate of crime. There are, however, a selected few business establishments that seem to attract the criminal offender because of poor building security. These establishments are usually in poorly-lighted areas and lack adequate security for the protection of the business.

C. USE OF PHYSICAL ENVIRONMENT TO REDUCE CRIME

Defensible Space. In response to the increase in urban crime rates during the late 1960's, architects, housing developers, city

planners, and police began to explore the relationship between man's physical environment and criminal activities. It had become apparent that the crime problems could not be solved by continual expansion of police forces or costly expenditures on security and surveillance equipment. Numerous studies were conducted to determine the relationships between the location of crimes and the physical considerations such as building size, densities, architectural features, and landscaping. Several conclusions were reached in regards to:

1. The reasoning behind why crimes occurred at disproportionate rates between various neighborhoods of equivalent social and economic character.
2. The types of building design and landscape treatment that either encouraged crime and vandalism or discouraged it.
3. What city planners, architects, and developers could do to prevent crime through design and thus contribute to the general welfare and social health of the city and its residents. Given the anticipated demands for new construction in the City, it is especially important that new buildings not create an environment that would encourage crime.

One idea that emerged from these various studies was the concept of "defensible space".

"Defensible Space" can be defined as a physical environment which inhibits crime by creating a social fabric that defends itself:

".....All the different elements which combine to make a defensible space have a common goal -- an environment in which territoriality and sense of community in the inhabitants can be translated into responsibility for ensuring a safe, productive, and well-maintained living space. The potential criminal perceives such a space as controlled by its residents, leaving him an intruder easily recognized and dealt with¹⁾

Traditionally, the responsibility for maintaining security in suburban neighborhoods has been relegated to the police and locksmiths. However, this situation is self-deceptive. When people attempt to protect themselves

1) Newman, Oscar Defensible Space, New York, Collier Books, 1973

on an individual basis rather than as a community, the battle against crime is effectively lost.

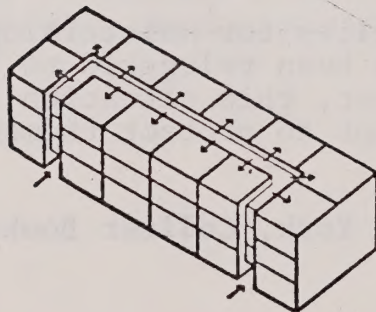
Some of the mechanisms that architects can use to demonstrate the function of a space and who its users are and ought to be included:

1. Grouping dwelling units to reinforce associations of mutual benefit (See Figure A)
2. Delineating paths of movement.
3. Defining areas of activity for particular users through their juxtaposition with internal living areas (See Figure B).
4. Providing for natural opportunities for visual surveillance (See Figure C).
5. Creating space which one feels is his rather than available to everyone.

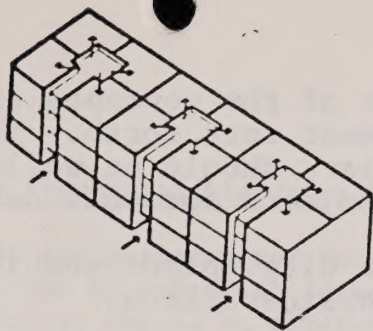
The role of the City in employing the concepts of "defensible space" and other crime preventive measures has never been formally defined. Although the design of development proposals are now reviewed by the Architectural Review Committee and City staff, crime preventive design measures have not traditionally been a concern of local governments. One of the purposes of this element is to formally describe the importance of "defensible space" and clearly illustrate the function of this concept as part of the general plan and development process.

Figure A

Alternate designs and access arrangements for three-story walk-ups. Both buildings were designed within the same three-dimensional envelopes, but their internal subdivisions produce radically different environments.



1. All thirty-six units in the building are accessible from the two entries and the double-loaded corridors. Twelve units shall have a hallway at each level.



2. Each of three separated entries serves its own twelve units. Only four units share a hallway at each level. Residents are easily able to extend their territorial claims to include the hallways and the entry to their particular sub-building.

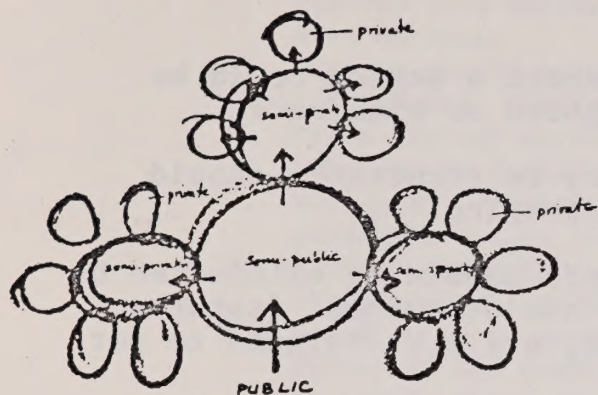


Figure B

Schematic diagram illustrating evolving hierarchy of defensible space from public to private. Arrows indicate entries at different levels of the hierarchy.

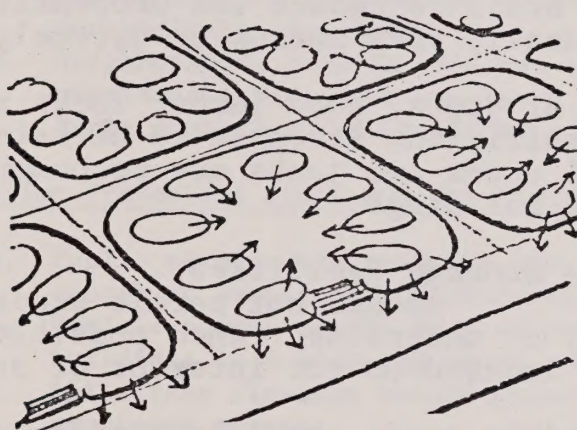


Figure C

Schematic sketch illustrating territorial definition reinforced with surveillance opportunities (arrows).

Reduction of Crime

Several design approaches have been used throughout history by various cultures to defend themselves and their property from outside intruders. Community design and architectural styles have been absorbed as part of the customs and lifestyle of various cultures throughout the world. For numerous technological and sociological reasons, the modern day American culture has often disregarded many crime preventive design measures.

As Lompoc continues to develop and redevelop, several design concepts can be included into the planning process to provide psychological deterrents to crime.

Crime preventive measures should be strongly encouraged in early design stages of all new construction and should be added to the list of considerations that the Architectural Review Committee, Planning Commission, and City Council weigh when considering approval of any project. The public as well as designers and decision makers

should at least be familiar with some of the concepts and implementation measures that the element sets forth. The Architectural Review Committee in particular, should be well educated in this field and carefully review projects for this design concern.

As projects are submitted to the City, plans should be reviewed in detail for the following considerations:

Exterior Features

1. Surface Irregularities - Areas where a person could be concealed should be avoided, lighted or eliminated.
2. Points of Entry - Points of entry to structures should not be obscured by walls or landscaping.
3. Ability to Climb - Access to roofs should be eliminated by insuring that surface materials and ornamental features, including landscaping and fences, are not designed to permit climbing.
4. Size of Windows - In order to reduce the propensity for crime, windows are ideally very narrow or extremely large.
5. Doors - The hardware of doors, door jambs, locks and hinges should be of sufficient strength to withstand severe forces. Metal doors and jambs are recommended on commercial and office buildings.
6. Storage Facilities - Storage facilities should not permit access to any structure, its roof, or underside. When possible, these facilities should be located on the interior of structures.
7. Roofs - Whenever possible roofs should not allow concealment.

Interior

1. Interior Areas - Interior walkways, atriums and uncovered spaces should be secured.
2. Lighting - Irregular surfaces and entryways should be lighted in a manner to prevent concealment. Two-foot candles on ground surfaces are recommended. Danger areas should be illuminated at approximately 4 to 6 foot candles.
3. Access to Underneath Structures - Access to the underside of structures should be eliminated.

Landscaping

1. Access to roofs via trees should be avoided.

D. STANDARDS

1. Crime Prevention Standards for Residential Subdivisions.

- a. Street patterns and lot plans should maximize social deterrents to crime by enhancing intra-neighbor observation.
- b. Houses should be clustered into small neighborhoods which are removed from thoroughways, thus making strangers in the neighborhood more obvious.
- c. Streets should be wide enough to permit clear observation and sufficiently straight to provide for adequate patrol observation.
- d. Major through streets should be sufficient in number and laid out in a manner to facilitate the police when responding to an emergency.
- e. Entrances to homes should be clearly visible to either patrols or neighbors unless residents choose to obscure them.
- f. House numbers for each residence should be clearly identified and visible at all times. Walkways in residential neighborhoods should be situated to generate enough traffic to provide a deterrent by virtue of the number of people using the walkways and wide enough to permit clear observation. They must also be adequately lighted and landscaped in a manner so as to provide minimum concealment for would-be attackers.
- g. Neighborhoods located adjacent to a commercial zone or school complexes should have some sort of buffer between them, such as a large expanse of park land or a high wall.

2. Crime Preventive Standards for Commercial Districts.

- a. Public streets and walkways should be fairly straight and wide enough to permit patrol observations.
- b. Vehicle access should be provided to the front and back of all buildings in a shopping center, mall or strip commercial area.
- c. All street closings should allow means for patrol observation and emergency access.
- d. Dead-end streets and alleys should be avoided.
- e. Adequate lighting should be provided along all streets, in parking lots, in landscaped areas, and interior areas.
- f. Landscaping materials along walkways and parking lots should not permit concealment.
- g. Parking stalls should be laid out to permit maximum observation by patrol, the public. If possible, the lot should be at a lower grade than the surrounding streets to increase observation.
- h. Entrances and exits to shopping facilities should be kept to a minimum, be well lighted, and visible to police patrols and the public.
- i. All means of gaining access to roofs should be removed except where conflicting with fire regulations.
- j. Buildings should be situated so that they provide no indentations or alleyways which could be used by assailants for concealment.

- k. Walkways should be situated to generate enough traffic to provide a deterrent by virtue of the number of people using the walkway at all times.
- l. All commercial buildings should have store name and street addresses prominently displayed, affixed or painted on all side and rear doors in such a manner as to be plainly visible to police patrols.

3. Crime Preventive Standards for Apartment Complexes.

- a. Large apartment complexes should eliminate all but the essential thoroughfares through the apartment areas without reducing fire suppression capabilities.
- b. The large apartment complexes should have sufficient setbacks from the perimeter streets to deter the casual passerby from entering the complex area.
- c. Street patterns and lot plans should maximize social deterrents to crime by enhancing the neighborhood observation and recognition.
- d. Apartments should be arranged on the site with adequate access streets to enable the police to respond quickly in an emergency.
- e. Unobservable windows should be kept to a minimum, especially on the first floor.
- f. Stairwells should be open and able to be observed at all times from public areas.
- g. Storage areas outside of the tenant's apartments should be located in a secure area where they are remote and not visible from an adjacent street. Access should be limited only to apartment dwellers.
- h. Walkways should be situated to generate enough traffic to provide a deterrent by virtue of the number of people using or observing the walkway. They should be wide enough and sufficiently straight enough to provide adequate observation, and lighted for evening activity.

VIII MAN-INDUCED OCCURRENCES.

The Lompoc area, like most urban areas, is subject to potential hazards from everyday operations of commerce, industry and government. The close proximity of Vandenberg Air Force Base Missile Test Center and the NASA operations pose a unique set of conditions relative to public safety which warrant discussion. Of primary concern is the transportation of chemicals, munitions, and fuels as well as their storage.

The Air Force and NASA operations require various types of common and exotic fuels and toxic chemicals for launches. Storage areas are maintained on various portions of the Base which are designed to eliminate hazard to urban development and base facilities in the event of explosion or fire. Common storage is underground with some storage in surface tanks. Of some potential hazard would be the escape of toxic gasses which might be in storage. Wind patterns could carry fumes as far as the Federal Correction Institute under the proper conditions. There are, however, various hazard control operations which are conducted by Base personnel to mitigate hazards connected with most all situations.

Of prime importance to the Lompoc community is the transportation of fuels and toxic chemicals through Lompoc. The major arterials (Ocean Avenue and "H" Street) are commonly used by carriers for such traffic. Portions of Ocean Avenue are designated truck routes while other portions of Ocean Avenue and all of North "H" Street have not been so defined by Ordinance. Other truck routes are designed to serve the commercial manufacturing district on Laurel Avenue and the Johns-Manville and Grefco mining operations in Miguelito Canyon. While greater and more convenient access to commercial and industrial users should be provided by the inclusion of all of Ocean Avenue and "H" Streets in the truck route ordinance, the transportation of fuels and toxic chemicals through the area should be routed outside of the central city for safety. An accident in the central area of Lompoc could pose a substantial threat to life and property from fire and explosion. At this time, alternate routing suitable for fuels, chemical and munitions transport does not exist. Most alternate routing provides equal exposure to heavy urban concentrations or would place carriers on roads and river crossings which are inadequate for heavy truck traffic and temporary or seasonally closed. The alternative recommendation is to provide the extension of Central Avenue across the Santa Ynez River to the east and connect to the existing roadway at State Highway 246. This would provide truck traffic routing to the Base away from substantially developed urban areas as well as reduce the number of stops having to be made and the potential of auto-truck mishap from the larger volume of traffic associated with Ocean Avenue and "H" Street.

IX EVACUATION ROUTES.

In the event of a pending emergency where sufficient time to evacuate the Lompoc Valley is available, three major routes shown on the truck and evacuation route map in the appendix can be used. The first is Ocean Avenue to Highway 1, south to Gaviota and Santa Barbara. This is a two lane road through narrow passages and contains numerous bridges which could be subject to seismic, geologic and flood conditions.

The second route is Ocean Avenue to Highway 246 leading to Buellton. This road is wide and has only one bridge at the junction of Highway 1 subject to seismic or flood conditions. The only potential problem lies with the fact that portions of the roadway lie in the area subject to inundation by dam failure.

The third route is "H" Street from Lompoc to the intersection of Highway 1 and S-20. Either S-20 or the Highway 1 route over Harris Grade could be used but Harris Grade is a very winding, narrow roadway subject to slide damage. The present condition of S-20 is one of partial closure due to landslide activity eroding away the southbound two lanes. The State has not issued a status report or program for repairs at this time. The County of Santa Barbara and Vandenberg AFB have offered to reconstruct the portion of the roadway which has been disrupted.

Further evacuation routes should be considered by the City due to the limit to the volume of autos which can travel Ocean Avenue and "H" Street out of town and the fact that under seismic, geologic, or flood hazards the City could be cut off from all normal ground transportation by the loss of its' bridges. There are no improved routes out of the Lompoc area over land not requiring travel over bridges. It is not necessarily critical that ground access be attained in all emergencies, but some passable route, improved or otherwise, linking the City to Highway 1 on the south could be of some advantage.

In those instances where rapid evacuation could save lives, it is also recommended that Central Avenue be developed traversing the Santa Ynez River and connecting to Highway 246 to the east.

X. PUBLIC SAFETY PLAN.

The discussion has been to define what risks exist in the Lompoc area and what actions can be taken to mitigate those risks. This section will deal with priorities of risk mitigation and outline a plan of action to respond to those risks.

A. UNACCEPTABLE RISKS RELATED TO FIRE

The City maintains an adequate fire service with historically good response times. In the event of a rash of fires some assistance can be provided through mutual agreements with the County of Santa Barbara. The distance from the County fire station however, creates a much longer response time and if conditions were critical, would provide little comfort to the property owner whose losses could be substantial. The most obvious mitigating measure is to provide an additional fire station with the equipment and manpower necessary for increased readiness and lowered response times as the City further expands. This action will cost the public both initial construction and annual maintenance tax dollars. Both the public and the City will have to express themselves relative to the benefits to present and future development and what the public is willing to pay for the protection.

The second critical factor in fire service is the present fire station structural condition as it relates to seismic safety. If a moderate to heavy earthquake were to occur it would be questionable if the Fire Department could respond to a fire call from the existing structure. Many structural improvements would have to be made to the building to upgrade and provide for seismic resistance. Upgrading and reinforcing the existing structure should be accomplished.

Mapping of potential conflagration areas as well as evaluations of structures of potential high risk from fire should be accomplished. As part of the identification program the survey should include specific recommendations for upgrading each structure to the fire defense capability of the City.

There are a number of areas where water supplies are identified as needing improvement. The City is involved in a program of upgrading those supply lines at this time.

B. UNACCEPTABLE RISKS FROM SEISMIC AND GEOLOGIC HAZARDS.

While specific identifications of hazardous structures is not yet accomplished, there is sufficient data to warrant a full scale engineering survey of the south central and downtown area and various public buildings.

A survey of the seismic and geologic sensitivity of existing water storage structures should be accomplished along with providing suitable mitigation measures for tanks existing and proposed above urban development.

C. UNACCEPTABLE RISKS FROM NATURAL ACTS.

Dam failures have not been included in the preliminary Public Safety Element, but full consideration must be made when written documentation is completed.

The City should promote the State's development of mobile home and trailer park tie-down regulations.

D. UNACCEPTABLE RISKS FROM MAN INDUCED HAZARDS.

Of primary importance is the development of Central Avenue east across the Santa Ynez River to provide for truck traffic to Vandenberg AFB. Included in the consideration of this route is the need to provide an additional evacuation route. Present capacities of roadways are limited to two routes eastward.

XI PRIORITIES IN HAZARD MITIGATION.

The following is a recommended list of tasks and problems which should be resolved in order of their importance.

1. Improvement of Fire Department services and existing station.
2. Structural survey for geologic hazards and fire hazards with a comprehensive abatement and improvement (Code enforcement) program in the central city area and in public buildings.
3. Soils and geologic survey for water storage structures.
4. Development of Central Avenue east to Highway 246.
5. Complete the Public Safety Element in relation to dam failures, aircraft accident hazards, emergency circulation plans and air pollution hazards, toxic chemicals and wastes and RF radiation hazards.
6. Develop a new Comprehensive Circulation Element to the General Plan.
7. Provide input for mobile home park tie-down requirements.
8. Test the various provisions of the Emergency Services Plan.

XII COMMENTS ON EXISTING PLANS.

A. The Emergency Services Plan.

The Emergency Services Plan generally provides for the organization and continued functioning of services provided by local government in a time of declared emergency or disaster. Some specific provisions are included in the Plan for the development and maintenance of operational plans such as information collection and reporting systems, damage assessment, equipment lists, housing inventories and many more. Some of these items are constantly changing and are a part of the daily workings of City government. Their location and ability for dissemination are relatively good given an emergency situation. Other items may not be so conveniently accessed or updated and should receive some consideration.

The Plan calls for the use of certain public buildings as emergency operation centers. The use of City Hall as the primary center and seat of government may be restricted under seismic events as structural problems could render portions or all of it unsafe for occupancy. Some considerations should be made with regard to providing alternate locations for maps, charts, plans and other information or providing structural improvements.

Evacuation plans and responsibilities should be more fully outlined as a result of any operation of the Emergency Service Plan.

B. General Plan Land Use Element.

The Land Use Element of the General Plan is consistent with the scope and nature of the hazards identified in this Element and the Environmental Resource Management Element. Some additional land use considerations may be considered on lands subject to flooding and seismic and geologic problems. Such considerations might include the type, density and design of structures.

C. OTHER GENERAL PLAN ELEMENTS.

The Circulation Element is in need of updating and thorough evaluation. Considerations must be made for improving truck routes, evacuation routes, emergency circulation patterns and the future planning of streets.

D. Building and Zoning Codes.

The primary need is to continue to enforce existing building and zoning codes and develop a hazard abatement and mitigation program. Adoption of new codes and changes to zoning districts will apply only where adequate data warrants such action.

XIII. ENVIRONMENTAL CONSIDERATIONS

Environmental Impacts of the Public Safety Element of the General Plan.

The Public Safety Element is a State mandated document which requires local government to examine those known conditions which present hazards to the community. Further, it sets policies and guidelines designed to reduce or abate those hazards in accordance with relative values of publicly perceived risk acceptance. The Public Safety Element, therefore, acts in part as a plan of guidance and mitigation of potential significant effects from identified environmental conditions.

Within each section of the Plan, the impact of the policies and actions recommended are discussed with consideration of both short and long term effects on the community. In implementing the plan, some negative aspects would have to be addressed such as the potential need to relocate residents or businesses, construct or demolish structures, or take unusual or emergency steps under the Emergency Services Plan. In implementing some of these policies, the specific actions may be exempt from the provisions of CEQA due to their definition as emergency or ministerial projects. Others would require individual evaluations as each action or sequence of activities were undertaken.

With this in mind, we can assume that adverse environmental affects which could not be avoided if this Element and its recommended actions were implemented, will include some changes to an established urban environment, some social and economic disruption as well as the potential to incur significant costs to private property owners and the public via local government funding.

It should be noted, however, that the actions recommended in this Element and the taking of those actions implied by recognition of the hazards found in the community, are either prescribed by law at this time or are designed and intended solely for the purpose of mitigating possible adverse effects before disaster occurs. Therefore, it is within our abilities to reduce and sometimes abate hazards to life and property when concerted efforts are made. It is also our continuing efforts through the enforcement of existing codes and ordinances which act as mitigating measures for limiting and avoiding unacceptable, avoidable and, often, tolerated risks.

There are alternatives to the recommended actions compiled within the Plan. The City could provide and undertake a less responsive program in some areas of hazard mitigation. For example, the fire service presently provided is adequate for most residential and commercial fires. When dealing with fires in areas where potentials for major conflagration exist, there is a definite need to improve fire service defense capabilities. So far, we have not dealt with such a condition, but the potential for a major conflagration cannot be easily discarded. The problem of over-reaction to potential hazards is also present. Occasionally conditions in the community can be explored and can result in legislative actions, code development or program development where

existing laws, regulations or programs will accomplish the needed change. The problem in alternatives is simply one of balancing costs against the responsibilities of public safety and the community perception of risks and ultimate benefits.

Some alternatives will often arise while into the implementation of a policy or set of policies. These alternatives can rarely be seen prior to actual implementation due to the inability of any individual or group to possess infinite knowledge. The use of these alternatives (often called opportunities) will be made only after the consideration of short and long term effects and benefits against their costs.

The time frame involved with this project and the environmental changes which will take place will have a definite effect upon the growth of the community. This Element speaks to hazard abatement, reduction and avoidance with various ongoing and proposed activities to be completed within a relatively short period of time. With few exceptions, these activities would be finished or part of the day to day City operation within the remaining half of this decade. It should be realized that while public safety considerations alone cannot sponsor desirable growth patterns, redevelop our City and increase the viability of economic investment, such considerations will have an impact which can, in time, be measured. With improved fire defense capabilities, fire insurance rates can be reduced. With the knowledge that a structure can withstand moderate earthquake or geologic event, the viability of investment in adjacent development or reinvestment in existing facilities is enhanced. With the knowledge that the hazards which could affect life and property can or are being mitigated, apprehension over the long term economic stability of the community can be reduced. Other projects, community programs and private development will have the greatest growth inducing impact, but increased security against risks from known hazards will indirectly contribute to community growth.

SUMMARY OF ENVIRONMENTAL IMPACTS.

The Public Safety Element of the City of Lompoc General Plan will have a significant impact upon the existing and future development of the City, if implemented. Adverse impacts include some potential for limited social economic disruption and limited economic loss in the short term. Both the short term and long term benefits to the public health and safety will outweigh these limited adverse effects. Mitigation of adverse effects can be achieved by both ongoing programs and new program development.

Failure to implement the Public Safety Element will have a significant effect upon existing and future development as those hazards addressed in the Element will not be effectively mitigated in a comprehensive manner under existing public and private activities.

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